(8)

proposition	reason
$A \rightarrow B \wedge C$ $\neg (B \wedge C)$ $\therefore \neg A$	rule #2
$A \vee D$ $\neg A$ $\therefore D$	rule #4
~~D~~ ~~$\therefore A \vee D$~~ D $\therefore B \vee D$	rule #5
$B \vee D$ $B \vee D \rightarrow E$ $\therefore E$	rule #1

(9) a) $\exists x \exists y (S(x) \wedge F(y) \rightarrow A(x,y))$

b) $\forall x \exists y (S(x) \wedge F(y) \rightarrow A(x,y))$

~~c) $\exists x \exists y (S(x) \wedge F(y) \rightarrow \neg A(x,y))$~~

~~d)~~

c) $\exists x \forall y (S(x) \wedge F(y) \rightarrow \neg A(x,y))$

d) $\exists x \forall y (F(x) \wedge S(x) \rightarrow \neg A(x,y))$

e) $\exists x \forall y (S(x) \wedge F(y) \rightarrow A(x,y))$

f) $\exists x \forall y (S(x) \wedge F(y) \rightarrow \neg A(y,x))$

(10) a) true b) false because negative numbers don't have real square roots

c) true, when $x=0$, d) true, when $y = \frac{1}{x}$ $(x \neq 0)$

e) true, when $x = \frac{1}{y}$ $(y \neq 0)$

f) solve $\begin{cases} x+2y=2 \\ 2x+4y=5 \end{cases}$

there's no solution; thus the statement is false

g) Solve $\begin{cases} x+y=2 \\ 2x-y=1 \end{cases} \Rightarrow 2x-2+x=1 \Rightarrow \begin{cases} x=1 \\ y=1 \end{cases}$

false because the values of x and y are fixed; not all x will yield ~~the~~ a value of y that satisfies both conditions.